

Appendix D

Tobamovirus Movement Protein

1
 SHMV SKIST--LLAPEKFEVKLSVSDKFKWKAPSRVCSIVQSDTISMTANGR-SL
 CGMMV SKVSVENSLKPEKFEVKISWVDKLLPNYFSILKYLSITDFS VVKAQSYESL
 CGMMV-W SKVSVENSLKPEKFEVKISWVDKLLPNYFSILKYLSITDFS VVKAQSYESL
 C-CGMMV SSVGKKNVLKPNEFVKLSWVDRILPDMFTVYRYSVTDYSVIKSKDSECL
 CFMMV SKVGVRNALKPEEFVKITWVDKLLPDAFTILKYLSITDYSVVQSKDYEHL
 YCGMMV SSVGKKNVLKPNEFVKLSWVDRILPDMFTVYRYSVTDYSVIKSKDSECL
 FPMV VELKEPKQLKVNDFVKMSFADKILPRSLTRLRTVSIS ETVVVKLSGLGST
 TMV-CG ???MSYEPKVSDFLALTKEEILPKAFTRLKTVSISTKDVISVKDESL
 CRMV ???MSYEPKVSDFLALTKEEILPKALTRLKTVSISTKDVISVKESESL
 CR-TMV ?MSIVSYEPKVSDFLNL SKKEEILPKALTRLKTVSISTKDIISVKESETL
 RMV-SH ???MSYEPKVSDFLALTKEEILPKALTRLKTVSISTKDVISVKESESL
 TVCV ?MSIVSYEPKVSDFLNL SKKEEILPKALTRLKTVSISTKDIISVKESETL
 TMGMV MAVSLRDTV KISEFIDLSKQDEILPAFMTKVKSVRISTVDKIMAVKNDL
 TMV-OB ---MSKAI VKIDEFIKLSKSEEVLP SFAFTRMKSVRSTVDKIMAKENDNI
 PMMV MALVVKDDVKISEFINLSAAEKFLPAVMTSVKTVRISKVDKVIAMENDSL
 ORSV MALVLRDSIKISEFINLSASEKLLPSALTAVKSVRISKVDKIISYENDTL
 TOMV-L MALVVGKGVNINEFIDLSKSEKLLPSMFTPVKSVMSKVVDKIMVHENESL
 TMV-vul MALVVGKGVNINEFIDLT KMEKILPSMFTPVKSVMC SKVDKIMVHENESL
 TMV-Rak MALVVGKGVNINEFIDLT KMEKILPSMFTPVKSVMC SKVDKIMVHENESL

51
 SHMV30K FTFDVLKDV LKHA--EEYTYVDVLGVVLSGQWLLPKGTPGSAEII LLDSRL
 CGMMV30K VPKLLRGV--DL-TKHLYVTLLGVVSGVWNPESCRGGATVALVDTRM
 CGMMV-W VPKLLRGV--DL-TKHLYVTLLGVVSGVWNPESCRGGATVALVDTRM
 C-CGMMV IPVDLLRGV--DL-SKSKYVTLGVVISGVWTIPENCAGGATVALVDTRM
 CFMMV IPVDLLRGV--DF-SKSKYVTLGVVISGVWTIPENCAGGATVALVDTRM
 YCGMMV IPVDLLRGV--DL-SKSKYVTLGVVISGVWTIPENCAGGATVALVDTRM
 FPMV VNLNLLKGV--VLNSES KYVTIRGVVISGVWMP EGGGGGATVTLMDRRM
 TMVCG CDIDLLVNV--PL-DKYRYVGLGVVFTGEWLVPDFVKG GVTVSVIDKRL
 CRMV CDIDLLVNV--PL-DKYRYVGLGVVFTGEWLVPDFVKG GVTVSVIDKRL
 CRTMV CDIDLLINV--PL-DKYRYV GILGAVFTGEWLVPDFVKG GVTISVIDKRL
 RMV-SH CDIDLLVNV--PL-DKYRYV GVLGVAFTGEWLVPDFVKG GVTVSVIDKRL
 TVCV CDIDLLINV--PL-DKYRYV GILGAVFTGEWLVPDFVKG GVTISVIDKRL
 TMGMVA 30KSDVDLLKGV--KL-VKKG YVCLADLVVSGEWNLPDNCRGGSVCIVDKRM
 TMV OB SEVDLLKGV--KL-VKNG YVCLVGLVVS GEWNLPDNCRGGSICLIDKRM
 PMMV SDVNLLKGV--KL-VKDG YVCLAGLVVSGEWNLPDNCRGGSVCLVDKRM
 ORSV 30K SDIDLLKGV--KL-VENG YVCLAGLVVTGEWNLPDNCRGGSICLVDKRM
 TMVL30K SEVNLLKGV--KL-IEGG YVCLVGLVVS GEWNLPDNCRGGSVCMVDKRM
 TMVOM30K SEVNLLKGV--KL-IDSG YVCLAGLVVTGEWNLPDNCRGGSVCLVDKRM
 TMV-RAK SEVNLLKGV--KL-IDSG YVCLAGLVVTGEWNLPDNCRGGSVCLVDKRM

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 SHMV30K -KGKASVLAVFNCRAATQEFQFLISPGYSLTCADALKKPFEISCNVIDLP
 CGMMV30K HSVAEGTICKFSAPATVREFSVRFIPNYSVVAADALRDPWSLFVRLSNVG
 CGMMV-W HSVAEGTICKFSAPATVREFSVRFIPNYSVVAADALRDPWSLFVRLSNVG
 C-CGMMV SMVDEGTICKFSVAASRDFTVKLIPNYYVAASDASSKPWSIFVRVSGVR
 CFMMV SLVSEGTICKFSVAASRDFTVKLIPNYYVTAADASSKPWSIFVRVSGVR
 YCGMMV SMVDEGTICKFSVAASRDFTVKLIPNYYVLAASDASSKPWSIFVRVSGVR
 FPMV KGFKNGLVAEFKTRASSRDFQFKFIPNYSMCVDDVKRAPWELFFKLVGVP
 TMVCG ENSKECIIGTYRAAAKDRFQFKLVPNYFVSVADAKRKPQVHVRIQNLR
 CRMV ENSKECIIGTYRAAAKDRRFQFKLVPNYFVSVADAKRKPQVHVRIQNLR
 CRTMV ANSKECVIGTYRAAAKSKRFQFKLVPNYFVSTVDAKRKPQVHVRIQDLK
 RMV-SH ENSRESMIGTYRAAAKDRRFQFKLVPNYFVSTADAKRKPQVHVRIQNLR
 TVCV VNSKECVIGTYRAAAKSKRFQFKLVPNYFVSTVDAKRKPQVHVRIQDLK
 TMGMVA 30KKRSKEATLGAYHAPACKKNFSFKLIPNYSITSEDAEKHPQVVLNIGVA
 TMV OB QRHNEATLGSYTTKASKKNFSFKLIPNYSITSQDAERRPWEVMVNIRGVA

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PMMV      QRDDEATLGSYRTSAAKKRFQFKVVPNYAITTQDAMKNVWQVLVNI RNVA
ORSV 30K  KRANEATLGSYHTSACKKRFTFKIIPNYSVTTADALKGIWQVMTNIRGVE
TMVL30K   ERADEATLGSYTAAAKKRFQFKVVPNYAITTQDAMKNVWQVLVNI RNVA
TMVOM30K  ERADEATLGSYTAAAKKRFQFKVVPNYAITTQDAMKNVWQVLVNI RNVA
TMV-RAK   ERADEATLGSYTAAAKKRFQFKVVPNYAITTQDAMKNVWQVLVNI RNVA

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SHMV30K   VKDGFPTPLSVEIACLVQFSNCVITRSLTMKLKE-N--PATRTF---SAEE
CGMMV30K  IKDGFHPLTLEVACLVAATTNSIIKKGLRASVVE-SVSSDQSI---VLDS
CGMMV-W   IKDGFHPLTLEVACLVAATTNSIIKKGLRASVVE-SVSSDQSI---VLDS
C-CGMMV   IKEGFSPLTLEIASLVATTNSILKKGLRVSVLE-SVVGSDASI---NLDT
CFMMV     IKDGFSPLEIASLVATTNSILKKGLRVSVLE-SVVGSDASV---SLDT
YCGMMV    IKEGFSPLTLEIASLVATTNSILKKGLRVSVLE-SVVGSDASI---NLDT
FPMV      IEDGYYPLAIEIATLVEQSRTIINHGLRATILKRCDDISDLELPSADLDE
TMVCG     IEAGWQPLALEVVSAMVTNNVVVKGLREKVIA-VNDPNVEGF-EGVVDD
CRMV      IEAGWQPLALEVVSAMVTNNVVVKGLREKVIA-VNDPNVEGF-EGVVDD
CRTMV     IEAGWQPLALEVVSAMVTNNVMKGLREKVVA-INDPDVEGF-EGVVDE
RMV-SH    IEAGWQPLALEVVSAMVTNNVVVKGLREKVIA-VNDPNVEGF-EGVVDD
TVCV      IEAGWQPLALEVVSAMVTNNVMKGLREKVVA-INDPDVEGF-EGVVDE
TMGMVA 30KMEEGYCPLSLEFVSICVHKNVVRKGLRERILS-VTDGSPIELTEKVVVE
TMV OB    MSEGWCPLSLEFVSVCIVHKNVVRKGLREKVTA-VSEDDAIELTEEVVDE
PMMV      MEKGFCPLSLEFVSVCIVHKSNIKLGLEKITS-VSEGGPVELTEAVVDE
ORSV 30K  MEKGFCPLSLEFVSICVVYLNNIKLGLEKILN-VTEGGPTELTEAVVDE
TMVL30K   MSAGYCPLSLEFVSVCIVYKNNIKLGLEKVTS-VNDGGPMELSEEVVDE
TMVOM30K  MSAGFCPLSLEFVSVCIVYRNNIKLGLEKITN-VRDGGPMELTEEVVDE
TMV-RAK   MSAGFCPLSLEFVSVCIVYRNNIKIGLEKITN-VRDGGPMELTEEVVDE

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SHMV30K   VDELLGSMTTLRSIEGLRKKKEP
CGMMV30K  LSEKVEPFFDKVPISAAMARDP
CGMMV-W   LSEKVEPFFDKVPISAAMARDP
C-CGMMV   VSDKVQPFSDSPITA AVIARDR
CFMMV     LSEKVPFFDSVPITASVVSRRD
YCGMMV    VSDKVQPFSDSPITA AVIARDR
FPMV      SIELVSNSNIVSKRKTHKKGKKR
TMVCG     FVDSVAAFKAIDFRKKKKRIGG
CRMV      FVDSVAAFKAIDFRKKKKRIGG
CRTMV     FVDSVAAFKAIDNFRKKKKVVEE
RMV-SH    FVDSVAAFKAIDFRKKKKKIGG
TVCV      FVDSVAAFKAIDNFRKKKKVVEE
TMGMVA 30KFVDEVPMAVKLEKVPENKKEMVG
TMV OB    FIEAVPMARRLQNLKPKYNKEK
PMMV      FIESVPMADRLRKFRNQSKKGSN
ORSV 30K  FVEKVPMAARLKSFRSVNKKKPS
TMVL30K   FMENVPMSVRLAKFRTKSSKRG
TMVOM30K  FMEDVPMSIRLAKFRSRTGKKS
TMV-RAK   FMEDVPMSIRLAKFRSRTGKKS

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Last Updated: Thu., May 31, 2001